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(54) Title: TEMPLATED NATIVE SILK SMECTIC GELS

(57) Abstract: One aspect of the present invention relates to a method of preparing a fibrous protein smectic hydrogel by way of a solvent templating process, comprising the steps of pouring an aqueous fibrous protein solution into a container comprising a solvent that is not miscible with water; sealing the container and allowing it to age at about room temperature; and collecting the resulting fibrous protein smectic hydrogel and allowing it to dry. Another aspect of the present invention relates to a method of obtaining predominantly one enantiomer from a racemic mixture, comprising the steps of pouring an aqueous fibrous protein solution into a container comprising a solvent that is not miscible with water; sealing the container and allowing it to age at about room temperature; allowing the enantiomers of racemic mixture to diffuse selectively into the smectic hydrogel in solution; removing the smectic hydrogel from the solution; rinsing predominantly one enantiomer from the surface of the smectic hydrogel; and extracting predominantly one enantiomer from the interior of the smectic hydrogel. The present invention also relates to a smectic hydrogel prepared according to an aforementioned method.